Exemption No. 7317

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
RENTON, WASHINGTON 98055-4056

In the matter of the petition of

Lufthansa Technik

For an exemption from §§ 25.562, 25.785(b), 25.785(h)(2), 25.785(j), 25.813(e) and 25.853(d) of Title 14, Code of Federal Aviation Regulations

Regulatory Docket No. 30023

PARTIAL GRANT OF EXEMPTION

By letter dated April 12, 2000, Mr. Bernhard Conrad, Senior Vice President Project and Development Engineering, Lufthansa Technik AG, Postfach 63 03 00, D-22313, Hamburg, Germany, petitioned the Federal Aviation Administration, for an exemption from §§ 25.562, 25.785(b), 25.785(h)(2), 25.785(j), 25.813(e), and 25.853(d) of Title 14, Code of Federal Regulations (14 CFR). The proposed exemption, if granted, would permit an executive interior to be installed for "private, not-for-hire" use on a Boeing Model 777-200 airplane.

The petitioner requests relief from the following regulation:

Section 25.562 - Emergency landing dynamic loading conditions for the installation of a medical berth.

Section 25.785(b) - Amendment 25-64, requirements for general occupant protection for the installation of a medical berth.

Section 25.785(h)(2) – Requires that flight attendant seats be located to provide a direct view of the passenger cabin.

Section 25.785(j) – Requires a "Firm handhold" along each aisle.

Section 25.813(e) - Prohibits installation of interior doors in between passenger compartments.

Section 25.853(d) - Limits maximum heat release rates and smoke emissions for large panel cabin interior materials.

The petitioner's supportive information is as follows:

Lufthansa Technik submitted a petition for exemption under FAR 11.25 from the following 14 CFR requirements:

"25.562 Emergency Landing Dynamic Conditions
25.785(b) Seats/berths to meet 25.561 and 25.562 requirements (both only in connection with the installation of a medical berth)
25.785 (h)(2) Cabin attendant direct view
25.785 (j) Firm handhold in 'state room'
25.813 (e) No doors between passenger compartments
25.853 (d) Heat release and smoke emission"

This exemption for the Boeing Model 777-200 is equipped with an executive interior as defined in the attached cabin layout. This Model 777-200 is for 'private, not-for-hire use' and not offered for public conveyance. Granting of the exemption is requested by this petition.

“Reference is made to FAA Exemption No. 6598 granted upon Boeing's application for the Model 777 series airplanes, addressing installation of a medical berth without meeting dynamic testing requirements.

“In addition reference is made to the Petition for Exemption submitted by Boeing in connection with the Boeing Business Jet BBJ (B-T113-98-3206, dated May 22, 1999) and the resultant FAA Grant of Partial Exemption No. 6820 and 6820A, which also address a number of reasons why certain exemptions from FAR 25 are considered to be reasonable for airplanes configured for private operation.

“General Background"

Lufthansa Technik (LHT) has been selected by Saudi Oger to complete a Boeing Model 777-2AN, MSN 29953, they have purchased from Boeing. The Saudi Oger 777 is the first LHT project for this airplane model to be operated under US-registration and certification is processed in the form of a German LuftfahrtBundesamt (LBA) STC for which validation by the FAA is sought under the recently concluded 'Implementation Procedures for Design Approval, Production Activities, Export Airworthiness Approval, Post Design Approval Activities, and Technical Assistance between Authorities,' in accordance with the Bilateral Aviation Safety Agreement between the U.S. and Germany (BASA IPA). The FAA has accepted our application and has assigned Project Number ST2611 NY-T for this project.

Exemptions are requested from the following provisions of FAR part 25 taking into consideration the use of the aircraft in a private, not-for-hire operation.

"1. FAR 25.562, Emergency Landing Dynamic Conditions and FAR 25.785(b), Berths to meet §§ 25.561 and 25.562 requirements (both only in connection with the installation of a medical berth)

"Exemption Requested:

"That the Boeing Model 777-200, when configured for private use and utilized under operating rules FAR part 91 or FAR part 125, be exempted from that part of FAR part 25.785(b) which requires berths to meet 25.561 and 25.562 requirements.

"Justification:

"The purpose of the hospital berth installed in the medical room is to transport non-ambulatory individuals who can not travel, for medical reasons, in a normal passenger seat. In most cases these individuals will be transported for the purpose of receiving needed medical attention.

"It should be noted that the in-service use of this unit will be extremely limited since it is designed and intended for use by non-ambulatory persons and is normally reserved for the Principal or members of the family only. There are no specific restrictions for its use, but the frequency of its use will be limited by the very nature of its intended use. It is expected that on average the berth will be used about once a year. The exposure to the possibility of an accident with the berth occupied is, therefore, considered extremely remote.

"On the other hand, demonstrating compliance with the requirements of § 25.562 would be very difficult, and applicability of the existing pass/fail criteria to these installations is questionable. Granting the exemption will allow the 777 airplane to be configured to provide transport of non-ambulatory individuals to locations with needed medical facilities. By not granting the exemption, transport of such individuals aboard 777 private flights will be denied and access to needed medical facilities may not be readily available.

"Reference is made to FAA Exemption No. 6598 granted upon Boeing's application for the Model 777 series airplanes, addressing installation of a medical berth without meeting dynamic testing requirements.

"Occupant Safety Considerations:

"The type of injuries that are to be minimized in frequency and severity with the adoption of FAR 25.562 are typically incurred by seated passengers. The subsequent injury criteria that is to be complied with as defined in FAR 25.562 and Advisory Circular 25.562-1A were developed to minimize HIC values, lumbar loading, femur loading, and torso compression. All of these injuries are consistent with seated individuals utilizing upper torso straps (shoulder harnesses) and/or lap belts when subjected to extreme forward and down loading. The occupant of a berth will be in a supine position and will not be subjected to the specific load paths defined for seated passengers. Enhancing the survivability of the berth occupant through compliance with FAR 25.562 is questionable since these injury criteria-were developed for seated occupants coming into contact with adjacent seat rows or fixed bulkheads. Therefore, the appropriate injury criteria for a non-ambulatory passenger occupying the berth do not exist. The berth/seat system will fully comply with the static load requirements defined in FAR 25.561. The occupant will be restrained by a shoulder harness whenever allowed by the nature of the medical condition.

"Granting the exemption will not reduce safety or limit the level of protection afforded by FAR's 25.785(b) and 25.562 to other occupants.

"2. FAR PART 25.785(h)(2), View of the cabin by a seated attendant.

"The rule states:
'(1) Near a required floor level emergency exit, except that another location is acceptable if the emergency egress of passengers would be enhanced with that location. A flight attendant seat must be located adjacent to each Type A emergency exit. Other flight attendant seats must be evenly distributed among the required floor level emergency exits to the extent feasible.

'(2) To the extent possible, without compromising proximity to a required floor level emergency exit, located to provide a direct view of the cabin area for which the flight attendant is responsible.'

"Exemption Requested:

"That the Boeing Model 777-200, when configured for private use and utilized under operating rules FAR part 91 or FAR part 125, be exempted from that part of FAR part 25.785(h)(2) which requires 'Direct view of the cabin area for which the flight attendant is responsible.'

“Justification:

“FAR part 25.785(h)(2) states in part 'to the extent possible without compromising proximity to a required floor level exit, located to provide a direct view of the cabin area for which the flight attendant is responsible.' The requirements of this paragraph were incorporated into the rules through Amendment 25-51 and the Amendment was part of the Airworthiness Review Program. Of the comments submitted to the FAA during the NPRM comment period, two commented that, if galley doors were used as emergency exits, the placement of an attendant seat near the exit, as required in proposed § 25.785(h), could preclude compliance with the requirement that the attendant be provided a direct view of the cabin area. To cover this situation, it was suggested that the requirement be conditioned to apply insofar as practicable and without compromising the proximity to required floor level exits. The FAA concurred and further stated in the preamble to the final rule that 'location of the flight attendant seats near the floor level exits in this case is more important than the requirement that the flight attendant have a direct view of the cabin.' The final rule was revised from the NPRM proposal to address this relative importance. As galleys located near floor level exits are an essential part of the operation and interior configuration of a commercial airplane in revenue service, so too are partitions and interior walls, essential to the successful operation and interior configuration of a business airplane in a private, not-for-hire service operation under FAR part 91 or FAR part 125. These features may interfere with the flight attendants direct view.

“Occupant Safety Considerations:

“Considering the smaller number of occupants in the business, private airplane, in this case less than 20% of that of a traditional commercial configuration, and the familiarity of the flight and cabin crews with the specific airplane, it's passengers and it's interior arrangement, and the wording of the existing rule that places the emphasis for safety on the proximity of the exit to the attendant over the ability of the attendant to view the cabin, area, there should be no degradation in the passenger safety as a result of this requested exemption.

"3. FAR 25.785 (j), 'Firm handhold' along each aisle.

“Exemption Requested:

“That the Boeing Model 777-200, when configured for private use and utilized under operating rules FAR part 91 or FAR part 125, be exempted from that part of FAR part 25.785(j) which requires a firm handhold along each aisle for the state room area.

“Justification:

“This is another situation which was not addressed under the BBJ exemption. In the 777-200 the issue arises because of its wide fuselage diameter as compared to the relatively narrow fuselage of the BBJ. Customers are buying large airplanes because they wish to create the same spacious and impressive atmosphere they are used to in their homes, offices or palaces. The wide body 777 satisfies these requirements in a perfect way. On the other hand, the requirement for a firm handhold along aisles cannot be met for the state room area due to wide open spaces between individual seat backs which typically provide an adequate handhold. In fact due to its spaciousness there is no readily identifiable "aisle" in the state room. Any construction hanging down from the ceiling would ruin the appearance of the stateroom and is not acceptable to the customer.

“Occupant Safety Considerations:

“The risk for occupants due to the non availability of direct handholds in the state room is considered acceptable for the following reasons:

"- The stateroom contains four tables reachable with only one or two steps with an adjustable height range of 21 to 30". While not meeting the generally acceptable height of 31" to qualify as a hand hold, they still allow a person to stabilize himself during turbulence. They are designed to remain structurally intact in such a situation.

"- All furniture in the stateroom has rounded corners and edges to avoid serious injury in case of turbulence.

"- The installed seats and divans are heavily upholstered and will not cause injuries when contacted.

"- There will be a recommendation to passengers to remain seated with their seat belts fastened.

"4. FAR 25.813(e), Prohibiting internal cabin doors in emergency access routes.

“The rule states the following: 'No door may be installed in any partition between passenger compartments.'

“Exemption requested:

“That the Boeing Model 777-200, when configured for private use and utilized under operating rules FAR pant 91 or FAR part 125, be exempted from the rule addressing doors between passenger seating areas. These cases were not considered when the rule was promulgated. These private, not-for-hire airplanes include separate areas of privacy for the occupants that can only be described as 'rooms' including surrounding walls and entry doors between the room and other parts of the airplane interior.

“Justification

“In the case of a private, not-for-hire airplane operating under FAR part 91 or FAR part 125 by an individual, a company, or a government, a portion of the interior cabin may be configured with privacy areas that are intended to exclude persons not seated within the room from being aware of conversations taking place within the room. Especially in the case of a business where business associates may be accompanying the owner, it is imperative that very private meetings must be accommodated by the facilities and furnishings in the passenger cabin of the airplane. The only conceivable method of providing for such privacy requirements is through the use of separate rooms consisting of walls and doors within the passenger cabin. In almost any imaginable operation of a business airplanes such as this, the requirement for doors between different areas of the airplane are basic and intrinsic to its operation. When a privacy area is created within the passenger cabin, the doors that separate the private area from the rest of the cabin will, by definition be located 'between passenger compartments.'

“For the case of a room covering the total width of the passenger cabin, the doors at the front of the compartment and at the aft end of the compartment would be doors latched open during taxi, takeoff and landing. This would be the requirement whether the compartment is occupied or not. The latch system would be redundant and the door and the latching system would be designed for crash loads. This configuration allows the room to be a part of the evacuation route between different parts of the cabin.

“For the case of a compartment that does not cover the total width of the passenger cabin and allows occupant access between different areas of the cabin by transversing around the compartment, the door to the compartment would be latched open when the compartment is occupied for taxi, takeoff and landing, and would be latched closed when the compartment is not occupied for taxi, takeoff and landing. The latch system would be redundant and the door and the latching system would be designed for crash loads. This configuration would ensure a viable escape route for occupants of the compartment in the case of emergency, and would preclude occupants from entering the compartment inadvertently during an evacuation should the compartment be empty.

“A peculiar situation not addressed in Exemptions 6820 and 6820A is the existence of large hinged double doors at an approximate 45 degree angle in the cross aisle connecting doors 2L and 2R. Due to the provision of a hospital berth in the medical room there needs to be a large door allowing sufficient width to maneuver when entering with a stretcher. While this situation did not exist in the BBJ layouts and the exemptions only addressed laterally translating doors across longitudinal aisles, we believe that the typical provisions like secure double latching in the open position for take off and landing required for granting Exemptions 6820 and 6820A are nevertheless satisfactory also for this peculiar situation.

“Occupant Safety Considerations

“Considering the small number of occupants in the planned configuration which represents less than 20% of the maximum allowable seating capacity of the 777, and the familiarity of flight and cabin crew as well as most of the passengers with the specific airplane and it's interior arrangement, the installation of doors which are latched in the open position for taxi, takeoff, and landing is considered acceptable. This will be accomplished in analogy to the wording of the existing rule § 25.813(f), which states: 'if it is necessary to pass through a doorway separating the passenger cabin from other areas to reach any required emergency exit from any passenger seat, the door must have a means to latch it in the open position. The latching means must be able to withstand the loads imposed upon it when the door is subjected to the ultimate inertia forces, relative to the surrounding structure.' It is obvious that the escape path is not to be obstructed by curtains or doors, however, insuring that the doors be latched in the appropriate direction during taxi, takeoff, and landing in order for the occupants to have an unobstructed path to the emergency exits would place the emphasis for safety on the proximity of the exit to the occupant and the escape path guidance. Therefore there would be no degradation in the level of safety by providing an exemption from the rule part 25.813(e).

"5. FAR 25.853(d), Requiring that cabin materials meet specific flammability standards.

“The rule in Amendment 25-61 states in part that the interior materials (including finishes or decorative surfaces applied to the materials) must meet the applicable test criteria prescribed and the interior components of airplanes must meet the established flammability standards for transport category airplanes with passenger capacities of 20 or more as specified in the test method used in showing compliance with these standards. It also states that using the OSU test apparatus, an average of three or more test specimens must not exceed 65 kilowatts per square meter peak heat release nor 6 kilowatt minutes per square meter total heat release during the first two minutes of sample exposure time (65/65). Using these test methods the evacuation must occur before lethal or non-survivable smoke and fumes fills the cabin from materials that might burn.

“Exemption Requested

“That the Boeing Model 777-200, when configured for private use and utilized under operating rules FAR part 91 or FAR part 125 be exempted from part 25.853(d) which requires interior components and materials to meet more stringent flammability measures than was previously required under Appendix F of part 25.853.

“Justification

“The owner of a private airplane will have specific needs for the use of exotic or plush, extremely comfortable materials to be used in the cabin. Usually these materials cannot satisfy the rigid flammability requirements of this paragraph. Compliance will be shown by separating out those materials of an exotic nature and complying with the earlier amendment level in those smaller quantities and show compliance to the newer amendment on the majority of the passenger compartment such as ceilings, walls, carpet, cabinets, galleys, and other seating areas.

“The purpose of this amendment was to ensure that occupants of an airplane, during an emergency that includes a cabin fire have an opportunity to evacuate the airplane before heat released by the fire or the phenomena known as 'flash-over' causes the environment in the cabin to reach the flash point of the ceiling material. In the case of a private, not-for-hire airplane operating under FAR part 91 or FAR part 125, with approximately 20 percent of the number of passengers carried in an equivalent sized airplane in revenue service (eighty or fewer passengers in a 777-200), an emergency evacuation of the airplane will occur much faster than in an airliner. Because of the lower passenger densities, the lower passenger-to-exit ratios, and the enhanced evacuation rate capability provided by the type of exits installed in the 777-200 airplanes, it is expected that evacuation of the cabin can be shown to be accomplished within the same 45 second limit established in exemption 6820A. Assuming the doubling of the heat release curve (as in the petition for the BBJ) evacuation will be completed before total heat release becomes critical.

“In addition, noncompliance will be typically limited to isolated compartments, which for take off and landing will be closed off by doors. The material used for the hallways and for the first class type areas in the aft will meet heat release criteria. Also all seat cushions will meet the fire blocking requirement of 25.853(c). We therefore request an exemption from this rule, because the passengers will have evacuated before the environment becomes lethal, or non-survivable and the smoke could overcome the occupants.

“Occupant Safety Considerations

“Considering the smaller number of occupants in the business, private airplane, in this case less than 20 percent of that of a traditional commercial configuration, and the familiarity of the flight and cabin crews with the specific airplane, and its interior arrangement there should be no degradation in occupant safety. Also considering that the flammability requirements were based on evacuation of the aircraft by a larger number of passengers within 90 seconds, the smaller number of passengers would be able to evacuate the aircraft in less time thus, before the cabin became unsafe from lethal or non-survivable smoke and fumes the passengers could be safely evacuated from the aircraft.

"Public Interest

"As in the case of the already established Exemptions No.6598, 6820 and 6820A, granting this Petition for Exemption would be clearly in the public interest as it allows efficient and safe carriage of Heads of State and executives in the sought for environment which would otherwise not be possible.

"Without the granting of this exemption the sales opportunities for the Boeing 777-200 would suffer, because the typical and highly desirable VIP type configurations with private quarters and comfortable seating arrangements could no longer be realized.

"Granting the exemption furthermore would be in the interest of international harmonization because a number of authorities worldwide have already accepted configurations as proposed in this petition for exemption.

"Granting the exemption will also allow the 777 airplane to be configured to provide transport of non-ambulatory individuals to locations with needed medical facilities. By not granting the exemption, transport of such individuals aboard 777 private flights will be denied and access to needed medical facilities may not be readily available."

A summary of the petition was published in the Federal Register on June 6, 2000, (65 FR 35989). No comments were received.

The Federal Aviation Administration's analysis/summary is as follows:

The FAA is giving great attention to the issue of transport category airplanes operated in private use. There are several regulatory requirements, including some of those identified by the petitioner, that lend themselves to consideration for modification when looking at the differences between commercial and private use operations. The FAA intends to summarize its views on these regulations and, ultimately, propose modifications to the requirements, where appropriate. It may be that the regulations that are the subject of this petition are included in the proposed modifications, and that additional design flexibility can be offered, when certain circumstances are met. This issue is not resolved at this time, however, and the particular airplane in question must be addressed on its own merits.

While it is true that the major impetus for most of the requirements referenced in this petition is commercial use, it is incumbent upon the FAA to upgrade design safety as the state of the art progresses, irrespective of the type of operation.

The FAA will discuss each of the petitioner's requests in the order presented.

Medical berth

The FAA agrees that medical berths for medical use were not considered in the context of the dynamic test requirements of § 25.562 when the regulation was developed. Occupancy of other berths during takeoff and landing for ambulatory persons was not considered feasible under the conditions of § 25.562.

The FAA agrees that demonstrating compliance with the requirements of § 25.562 would be very difficult, and applicability of the existing pass/fail criteria to these installations is questionable.

The FAA has also considered that the use of medical berth is limited, and on a case by case basis. The exposure to the possibility of an accident on any given flight is therefore less than for airplanes in general. Since use of the medical berth for takeoff and landing is limited only to those persons whose medical condition dictates travel in that manner, the FAA does not consider this a precedent setting finding.

With respect to the overall level of safety, the FAA notes that full compliance with the requirements of § 25.561 will be demonstrated for the medical berth including the occupancy of the berth by a 170 pound occupant. The medical berth is installed in the medical room. It is remotely located from the normal passenger occupied locations during taxi, takeoff and landing. The remote location will reduce the exposure to passenger injury from the medical berth in the event the berth would separate from its attachments. The medical berth is not permanently attached to the airplane; therefore, the means of attachment to the airplane must be simple, obvious, and indicating type latches.

Direct View

The petitioner identifies the requirement for flight attendant seats to be located to provide a direct view of the passenger cabin as not practical for compliance with the executive type interior to be used on the Boeing Model 777-200 airplane. The complexity of the interior arrangement, coupled with the need to retain proximity to emergency exits is cited as the primary reason that compliance is impractical.

The FAA has considered the requirement for direct view in the context of private use airplanes, and agrees that much of the justification for the requirement is based on air carrier type operations. On a private, not-for-hire airplane, the practicality of locating flight attendant seats near emergency exits so that there is a direct view of occupants inside of rooms is questionable, at best. In this regard, the FAA does believe that some relief may be appropriate for airplanes intended for private use. The FAA notes that the justification for the requirement for direct view is not limited to observation of passengers that are not familiar with the interior, however. Flight attendant seats should be located so that there is a direct view provided for the cabin area that is practical. Flight attendant seats should not face away from the cabin, for example. In those areas of the airplane where traditional seating arrangements are used, the FAA believes that direct view should be provided.

In considering the need for direct view, the FAA agrees that the restricted nature of the operation of a private use airplane mitigates much of the need. That is, the operator has control of, and can restrict the population of passengers, unlike an air carrier. The risk of passengers engaging in hazardous or malicious activity is essentially eliminated, and the need for direct view is limited to those cases where a passenger might need assistance. We consider that this objective is met by requiring that a majority of flight attendants seats face the cabin.

Firm Handhold

The petitioner requests an exemption from the handhold requirements of § 25.785(j) for the area of the "state room." The "state room" has several divans installed around the outside of the room and in front of each of the divans are adjustable height tables. The FAA has considered the requirement for handholds in rooms in the context of private use airplanes. For the "state room" the requirement to have a firm handhold would be impractical for the proposed configuration. The arrangement of the "state room" and the proposals that the petitioner has made produce a configuration that provides an acceptable level of safety.

Interior Doors

This issue is clearly quite significant to the owner that will operate this airplane. The flexibility to partition the airplane in a multitude of locations for customization is regarded as paramount to an acceptable interior. The availability of private meeting space is essential. The FAA acknowledges the desirability of this feature from the operators point of view.

As noted by the petitioner, the regulations regarding interior doors did not necessarily consider "rooms" when they were adopted. Nonetheless, the concerns with the doors that were the target of the regulation, (namely, the potential to obstruct access to emergency exits as well as creating a potential for lack of recognition of exits beyond the door) apply to other types of doors as well. In fact, the current regulations do allow the installation of interior doors, provided passengers are not seated on both sides of the door for takeoff and landing. The FAA is concerned that doors not be located between passengers and exits, and has proposed to prohibit such installations in the future in Notice of Proposed Rulemaking 96-9.

The petitioner proposes several different doors in the passenger cabin that fall into three categories. The first category is a door on a room that is not the complete width of the airplane (there is an aisle on the outside of the room), the room may be occupied during take-off and landing and for which only the occupants of the room must use the door to reach an exit. The second category is a door on a room that is not the complete width of the airplane (there is an aisle on the outside of the room), the room may be occupied during take-off and landing and there is a single emergency exit within the compartment.

The third category is a door on a room that is the complete width of the airplane, passengers are seated on both sides of the door and the room has a pair of emergency exits in one end of the compartment.

After considerable deliberation, the FAA has concluded that in regards to the installation of interior doors between passenger compartments, not all interior doors are equivalent. For the doors in the first category that only the occupants of the room must use to reach an exit, the FAA believes that there is a potential to find an acceptable installation. However, for the second and third categories of doors, the operator of the airplane must acknowledge that the level of safety may not be the same. The petitioner requests this exemption, with the recognition of the potential change in the level of safety. The FAA has concluded that the following criteria will produce an adequate level of safety for doors installed between passenger compartments for the occupants of this private use airplane.

With respect to the integrity of the means used to latch doors open for takeoff and landing, the FAA considers that redundant means are necessary. Each latching means should have the capability of retaining the door in the takeoff and landing position under the inertia forces of § 25.561. In addition, the FAA believes that the door must be frangible, in the event that it is closed, or closes during an emergency landing. Frangibility may be demonstrated in accordance with the criteria set forth in Advisory Circular 25-17, Transport Airplane Cabin Interiors Crashworthiness Handbook, paragraph 43.b(2).

Doors that fall into the first category must be in the open position during taxi, take-off and landing only when the room is occupied. Doors that fall into second and third category must be in the open position during taxi, take-off and landing, regardless of occupancy.

With respect to the possibility that a door will remain closed when it should not be, the FAA believes that a higher level of awareness is required to address this issue. Due to the relative complexity of the cabin interior, the FAA does not believe that inspection by flight attendants prior to takeoff and landing is sufficient to verify that interior doors are in their proper position. Consequently, some type of remote indication is considered necessary; the petitioner's proposal to provide remote indication to the flight crew is considered adequate.

In order to maximize the level of safety, the FAA will require that the doors installed across the main cabin aisle open and close in a transverse direction. That is, the direction of motion of the door must be at a right angle to the longitudinal axis of the airplane. A "pocket door" is one example of such a design. This will tend to minimize the chance that the inertia forces of an accident could force the door closed.

The FAA will also require that notification of the existence of second and third category of doors be provided to passengers who are flying on the aircraft for the first time.

Interior Materials

With respect to the flammability of interior materials, the petitioner has accurately summarized the requirements. The petitioner correctly notes that the requirements are related to prolonging the time available for evacuation.

In promulgating the rulemaking, the FAA did incorporate a discriminant based on passenger capacity that was intended to address smaller airplanes, where the ratio of exits to passengers is typically quite good, and where the evacuation times are expected to be quite low. Under these conditions, the benefits of improved materials were expected to be negligible. The airplane type discussed in the petition was not envisioned by the rulemaking, insofar as the large size with low passenger count is concerned. The FAA has considered the issue of the evacuation capability of the airplane relative to the flammability of the materials and believes that there may be some relief possible. However, the issue of flammability is not limited to post-crash scenarios, and the inflight fire threat must also be addressed. The FAA notes that the petitioner has not proposed an alternative heat release or smoke emission criteria, but rather an exemption from the requirement to assess the heat release and smoke emissions of certain materials altogether.

The petitioner requests relief for exotic or plush materials that can not meet the requirements of § 25.865(d) and has proposed that these materials meet all of the other pertinent flammability requirements contained in § 25.853. The petitioner states that the material used for the hallways and for the first class type areas in the aft will meet the requirements of § 25.853(d).

The petitioner argues that with the limited number of passengers on the airplane (maximum of 80 passengers) an evacuation of the airplane would occur much faster than on a typical Boeing Model 777-200 series airplane operated by an airline. Therefore, the petitioner proposes that an acceptable level of safety can be obtained for this airplane, with some exotic and plush materials installed that do not meet the requirements of § 25.853(d), if the evacuation time described in § 25.803(c) is reduced to 45 seconds.

Since the main benefit of improved interior materials is to lengthen the time available for evacuation, an arrangement that effectively provides the same evacuation capability would satisfy much of the concerns addressed by the requirement, albeit indirectly. The

FAA has reviewed the full-scale fire test data used to develop the heat release requirements, as well as considered accident data relevant to this issue. The FAA notes that the petitioner's estimate of the improvement in evacuation time offered by the reduced passenger capacity, compared to Boeing Model 777-200 series airplane in air carrier service, is in fact, only marginally lower than that actually demonstrated during the original type certification with a maximum passenger capacity. The original type certification was demonstrated with four pairs of Type A exits, whereas the subject airplane has three forward Type A exit pairs that are de-rated to Type I exits. The passenger capacity for an airplane with four pairs of Type A exits is 440 compared to the subject airplane with 245 passengers. In reviewing the data developed to date, the FAA considers that a 45 second improvement in evacuation time over that allowed by the regulation would be required to relax the heat release and smoke emissions standards. That is, the actual passenger arrangement and exit configuration would have to show an evacuation capability of 45 seconds. The one minute improvement in evacuation time correlates with the benefits derived from the improved materials for the post crash scenario.

The remaining issue of the inflight fire scenario needs to be addressed as well. The major issue with respect to inflight fires is timely recognition. The interior includes isolated areas, which do not lend themselves to timely detection of a fire. For the purposes of this exemption, an isolated passenger compartment is defined as a room that does not contain an egress path (e.g., main cabin aisle, crossaisle or passageway), or is isolated by a door. In order to address the inflight case, the FAA believes that installation of a smoke detector in such areas would compensate for the potential for an increased inflight fire threat. Therefore, each isolated passenger compartment must incorporate a fire detection system that meets the requirements of § 25.858. While this section is written for cargo compartment fire detection systems, the criteria contained therein are considered appropriate to this application.

In consideration of the foregoing, I find that a grant of exemption is in the public interest and will not affect the level of safety provided by the regulations. Therefore, pursuant to the authority contained in § 49 U.S.C. §§ 40113 and 44701, delegated to me by the Administrator (14 CFR 11.53), Lufthansa Technik is hereby granted an exemption from the requirements of §§ 25.562, 25.785(b), 25.785(h)(2), 25.785(j), 25.813(e), and 25.853(d) to allow the installation of a medical berth that does not meet the dynamic seat requirements, flight attendant seats that do not provide direct view of the cabin, a "state room" that does not provide firm "handholds" in the aisle, to allow the installation of interior doors between passenger compartments, and to install interior materials that do not comply with heat release and smoke emissions requirements for Boeing Model 777-2AN airplane serial number 29953.

1. The airplane is not operated for hire, or offered for common carriage. The maximum passenger capacity is limited to 80.

2. Occupancy of the medical berth for takeoff and landing is limited to non-ambulatory persons. Suitable means to identify this limitation shall be provided as part of the medical berth type design.

3. The medical berth must meet the requirements of § 25.561 when occupied by a 170 pound person.

4. The latches that attach the medical berth to the airplane must be simple, obvious, indicating type latches.

5. A majority of flight attendant seats must be oriented to face the passenger cabin.

6. Each door between passenger compartments must be frangible.

7. Each door between passenger compartments must have a means to signal to the flight crew when the door is closed. Appropriate procedures/limitations must be established to ensure that takeoff and landing is prohibited when any such door is not in the proper takeoff and landing configuration.

8. Each door between passenger compartments must have dual means to retain it in the open position, each of which are capable of reacting the inertia loads specified in 14 CFR § 25.561.

9. Doors installed across a longitudinal aisle must translate laterally to open and close.

10. When materials are installed that do not comply with the requirements of appendix F, parts IV and V, it must be shown that the passengers and crewmembers can be evacuated in 45 seconds or less, under the conditions described in part 25, appendix J.

11. There must be means that meets the requirements of § 25.858(a)-(d), to signal the flight crew in the event of a fire in any isolated passenger compartment (as defined above).

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/s/ Donald L. Riggin
Donald L. Riggin
Acting Manager
Transport Airplane Directorate
Aircraft Certification Service, ANM-100